UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
OSB1998-0031-RI

July 12, 2000

Mr. Lawrence Evans
U.S. Army Corps of Engineers
Portland District, CENWP-CO-GP
P.O. Box 2946
Portland, Oregon 97208-2946

Re: Section 7 Consultation for Medford Sewage Treatment Plant Construction, Jackson County, Oregon – Modification of Incidental Take Permit

Dear Mr. Evans:

This letter amends the August 20, 1998 biological opinion (the biological opinion) issued by the National Marine Fisheries Service (NMFS) on the Medford Sewage Treatment Plan (OSB1998-0031; COE ID #1998-00356). These amendments are based on correspondence from the Corps of Engineers (COE) dated August 24, 1999 and information contained in a revised mitigation and monitoring plan submitted to the NMFS by representatives of the City of Medford (the applicant) on June 26, 2000 regarding proposed modifications in construction of the facility.

The COE found that these project modifications are "not likely to adversely affect" listed species or critical habitats in the project area. After reviewing the proposed modifications, including new measures to minimize the likelihood of incidental take that the NMFS now regards as integral components of the action, the NMFS does not concur with the COE's effects determination. However, for reasons set forth in the attached document, the NMFS does find that the likely adverse affects of the modified project will be minimal and within the range of effects considered in the biological opinion. Further, the NMFS finds that the level of incidental take that will occur as a result of the modified project will not exceed that which was expected as a result of the original proposal. Accordingly, we conclude that the modified project is not likely to jeopardize the continued existence of the affected species or result in the destruction or adverse modification of critical habitat.

Nonetheless, changes in the status of listed species and critical habitats in the project area and in the Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources (ODFW, 2000) since the opinion was issued require that the reasonable and prudent measure and terms and conditions in the opinion be replaced with updated information as shown in the attachment.

Questions regarding this consultation should be directed to Dan Kenney of my staff in the Oregon State Branch Office at (541) 957-3385.

Sincerely,

for William Stelle, Jr.
Regional Administrator

cc: Gordon Dunkeld, Oregon Division of State Lands
Mike Evenson, Oregon Department of Fish and Wildlife
Steve Wille, U.S. Fish and Wildlife Service

Attachment: Section 7 Consultation for Medford Sewage Treatment Plant Construction, Jackson County, Oregon – Modification of Incidental Take Permit (July 11, 2000).

Changes in the Proposed Action. The applicant proposed three changes in the Facility construction:

1. Construction of a steel trestle to support a 100-ton crane and a rotary drilling rig instead of a solid platform.

The 15 by 80-foot trestle will be constructed using three bents of two steel H-piles, driven using an impact hammer. The first pair of piles will be approximately 30 feet up slope from the river's edge, the second pair would be driven at the water's edge, and the third pair would be approximately 40 horizontal feet into the river. Each pile is expected to require one hour or less of impact hammering to drive into position. Concrete footings would be poured for each piling in the first bent. The pilings would be welded together with steel beams and timber mats would be used to support the crane and drilling rig.

2. Drilling 18 holes into the bedrock of the area to be trenched, placing approximately 30 pounds of high explosive in each hole, and detonating the explosives to fracture the bedrock.

The holes will be drilled to 2.5 to 3-inch in diameter, with steel casings, through several feet of the loose overburden of the river bed and approximately another seven to 10 feet deeper into underlying basalt bedrock. The holes would be drilled in three columns of six, on 4-foot centers. The rotary drill would be pneumatically operated, with the gravel-sized rock chips produced discharged to the river. No drilling muds or other potentially toxic lubricants will be used, and the contractor expects the drilling to be completed in less than one day. When the drilling is complete, the steel casings will be left in the holes extending above the river's surface to allow placement of explosives.

Approximately 33 pounds of dynamite-like high explosives will be placed in each drilled hole, for a total of approximately 590 lbs. of explosives. The explosives would be primed with timed blasting caps so that a minimum of a 25-millisecond delay would occur between the detonation of each hole's charge. The delay between charges should ensure that the peak pressure wave caused by the detonation of each charge is not increased in magnitude by the persistence of the pressure wave created by the previous explosion (pers. comm., Dr. Gregory Hempen, geotechnical engineer, COE, 6/22/00). The explosives would fill the casing to near the elevation of the surface of the bedrock, and the remainder of the casing (to the surface of the river) would be filled with angular gravel ("stemming"). After detonation of the explosives, the overburden, fractured bedrock and casing remains would be excavated from the trench area with the clamshell bucket of the crane. The diffuser pipe would be laid and buried in a manner similar to that described in the biological opinion, then the trestle will be disassembled and the steel H-piles will be removed by the crane and/or a vibratory extractor.

3. Conducting specific monitoring, mitigation, and reporting activities related to the explosive fracturing of bedrock. The drilling and blasting are proposed to occur within a few days during July 2000.

The Applicant will carry out the following actions to minimize the impact of incidental take caused by the in-water detonations.

a. Snorkel or SCUBA surveys and split-beam hydroacoustic equipment will be completed prior to detonation to detect the location, density and presence of any fish species in the immediate work area, and to assess the effectiveness of fish driving and exclusion efforts.

b. Exclude fish from the blasting area following the driving activities using a using a bubble curtain produced by dispersing compressed air through a PVC pipe enclosing a 10-foot buffer around the outer charges, and an electric fish barrier deployed approximately 100 feet downstream of the blasting site. Less than 1,000 square feet of river will be enclosed withing the bubble curtain. The bubble curtain will also act as a pressure-wave attenuator, which should greatly reduce the intensity of the pressure waves generated by the explosives, but would not protect fish within the curtain. The applicant will set up the bubble curtain about 10 feet from the outer charges, so that less than 1,000 square feet of river would be within the curtain.

c. Temporarily drive or herd fish from the blasting area immediately prior to detonation of the explosives using boat-mounted electrofishing equipment operating at low power and, possibly, detonation of small, firecracker-like noise-making devices.

d. Four sets of juvenile salmon from hatcheries, provided by the Oregon Department of Fish and Wildlife (ODFW), will be placed in cages at different distances away from the blast area to assess, after the fact, the lethal range of the explosive detonation. The first cage will be placed within the bubble curtain so that the fish would receive the full force of the pressure waves from the blast. The second cage would be placed only a foot or two outside of the bubble curtain to assess the effectiveness of the curtain at close range. The third and fourth cages will be placed 25 and 50 feet from the curtain, respectively, in the event that the curtain does not provide full protection. Further, crew members with dip nets on one or two boats would be placed at appropriate locations downstream of the blast area to collect any uncaged fish that might be injured or killed by the blast.

e. The applicant will submit a report to ODFW and the NMFS within 90 days of detonation describing results of the actions to reduce incidental take and monitoring described above.

Status of Listed Species and Critical Habitat. The biological opinion analyzed the effects of the original proposed action on two species, the Southern Oregon/Northern California (SONC) coho salmon (*Onchorynchus kisutch*), listed as threatened on May 6, 1997 (62 FR 42588) and the Southern Oregon/Coastal California chinook salmon (*Onchorynchus tshawytscha*), proposed for

listing on March 9, 1998 (63 FR 11482). Since then, critical habitat has been designated for the SONC coho salmon (May 5, 1999; 64 FR 24049), including the Rogue Basin, and it was found that the Southern Oregon/Coastal California chinook salmon does not warrant listing at this time (September 16, 1999; 64 FR 50394). No other listed species or designated critical habitats occur in the project area.

Analysis of Effects. Although effects of the construction of the steel trestle, per se, were not previously analyzed, the trestle construction techniques are similar to those that would have been be used to construct the sheetpile and rock fill platform originally proposed. For example, construction of the platform would have required pile driving and welding. However, it appears that construction of the trestle can be completed with substantially less effect on the aquatic environment than the construction of the platform because less pile driving is required and no rock fill would need to be placed in the river and subsequently removed. The NMFS therefore finds that effects of the trestle construction on SONC coho and its critical habitat will be within the range of effects considered in the biological opinion.

The effect of drilling of 18 holes into the bed of the Rogue River was not analyzed in the biological opinion. However, since the proposed drilling will occur within a steel casing and mostly occur beneath loose substrates, it is likely to cause substantially less noise and turbidity than mechanical bedrock excavation using heavy equipment. Drilling will also require less time to complete than mechanical excavation. Therefore, the NMFS finds that effects of the drilling on SONC coho and its critical habitat will be within the range of effects considered in the biological opinion.

Physical effects associated with pressure waves generated by 18 underwater detonations of high explosives could cause adverse effects to aquatic organisms including any SONC coho salmon which may be within proximity of the blast site. In particular, the rapid oscillation between high and low pressure waves has the potential to burst the swim bladders and other gas-containing organs of fish (Keevin and Hempen 1997). Applying the weight of the delayed charges and the rock density value for the action area to a formula used to identify the approximate radius of the lethal pressure wave for fish that would result from blasting (Wright and Hopky 1998) suggests that the fish-lethal radius of the proposed detonations is approximately 64 feet.

Bubble curtains can attenuate the pressure waves produced by the detonation of high explosives from 80 percent to more than 99 percent, with corresponding reductions in fish mortality depending on the size of the charge and distance from the detonation (Keevin and Hempen 1997). Specifications for the bubble curtain to be constructed and used during this project were provided by a leading researcher on the effects of underwater explosions on aquatic organisms (pers. comm., Dr. Gregory Hempen, COE, 6/23/00).

Other actions proposed by the applicant to minimize the impact of incidental take include fish surveys to guide driving or herding actions, and deployment of the bubble curtain and electric barriers as necessary to eliminate or reduce the number of fish that might be affected by the blasting. As discussed above, use of the bubble curtain will substantially attenuate the blast pressure wave outside of the bubble curtain. Use of stemming material and the location of the bedrock under several feet of loose substrate will also reduce the pressure wave of the blasts.

Reasonable and Prudent Measure

1. The COE will ensure that the City will minimize the potential for direct incidental take of SONC coho salmon due to use of heavy equipment to construct the trench and trestle, including turbidity sedimentation, and erosion.

Terms and Conditions

1a. Minimization and avoidance measures listed in Attachment 3 for in-water work, erosion control, hazardous materials, riparian impacts, and monitoring will be accomplished for the proposed action in accordance with the terms and objectives of Attachment 3. Although Attachment 3 specifically deals with road-construction and maintenance activities of the Oregon Department of Transportation, the measures, terms, and objectives are directly applicable to the proposed action.

1b. All work within the active flowing channel (in-water work) will occur between June 15 and September 15.

1c. Replace and maintain riparian vegetation at the project site with native species to the maximum extent horticulturally possible.

References

Keevin, T.M. and G.L. Hempen. 1997. The environmental effects of underwater explosives with methods to mitigate impacts. U.S. Army Corps of Engineers, St. Louis District.

ODFW (Oregon Department of Fish and Wildlife), Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources (June 2000). 11 pp.

Sandercock, F.K. 1991. Life history of coho salmon. Pages 395-445 *in* C. Groot and L. Margolis, eds. Pacific salmon life histories. University of British Columbia Press, Vancouver.

Wright, D.G. and G.E. Hopky. 1998. Guidelines for the use of explosives in or near Canadian fisheries waters. Canadian Technical Report of Fisheries and Aquatic Sciences 2107.